

clearing weather and a rise in the barometer of from 0.20 to 0.33 inch; winds still north and northeast. No. XIX.—On the 19th an area of 29.80 covered the China sea and Pacific ocean in the vicinity of the islands of Formosa and Luzon; Manila, 29.73, WNW. 20th. Manila, 29.70, WNW.; Macao, 29.80, NW.; in  $26^{\circ} 17' N.$ ,  $121^{\circ} 27' E.$ , 29.50, E., force 6, heavy rain, very rough sea; Zi-Ka-Wei, 29.93, NNE., cloudy. 21st and 22d remained about stationary southwest of the Japan Islands, barometer slowly falling at all stations, accompanied by north-east winds and occasionally heavy rains. 23d, depression moved rapidly eastward to near  $144^{\circ} E.$ , followed at all Japanese stations by rising pressure and clearing weather; in  $36^{\circ} 59' N.$ ,  $150^{\circ} 47' E.$ , 29.77, NNE., force 5, cloudy weather; the remainder of the storm's course as charted depends upon the reports of the *S. S. Belgic*, of the Occidental and Oriental S. S. Co., during a portion of her voyage from Yokohama to San Francisco. 24th, in  $37^{\circ} 50' N.$ ,  $156^{\circ} 26' E.$ , 29.83, N., force 5, cloudy. 25th, in  $39^{\circ} 03' N.$ ,  $161^{\circ} 54' W.$ , 29.86, NNE., force 4, cloudy. 26th, in  $40^{\circ} 08' N.$ ,  $167^{\circ} 03' W.$ , 29.83, ENE., force 4, squally. 27th, in  $41^{\circ} 07' N.$ ,  $171^{\circ} 38' W.$ , 29.61, E., force 6, heavy rain and violent squalls. 28th,  $42^{\circ} 04' N.$ ,  $176^{\circ} 21' W.$ , 29.54, S., force 5, cloudy weather, heavy sea. 29th, in  $43^{\circ} 05' N.$ ,  $177^{\circ} 37' W.$ , 29.61, WSW., force 5, cloudy, moderate sea. 30th, in  $43^{\circ} 32' N.$ ,  $171^{\circ} 13' W.$ , 29.75, NNW., force 6, heavy squalls. On the following day the ship encountered an area of high pressure, (30.10,) with clearing weather and winds shifting to west and northwest.

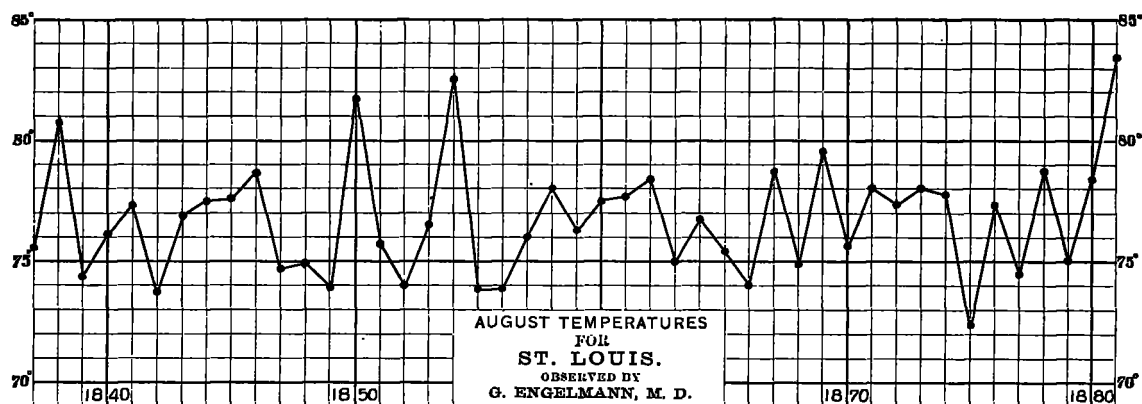
### TEMPERATURE OF THE AIR.

The mean temperature of the air for August, 1881, is shown by the isothermal lines (in red) on chart No. II. The table of mean and comparative temperatures in the right-hand corner of the chart shows, in the first column, the average for the month throughout the various districts, as deduced principally from observations taken at Signal Service stations. In the two remaining columns are shown the means for the present month and the departures of such means from the average for many years. In all districts east of the 100th meridian, except the Florida peninsula, which is normal, the temperature is everywhere above the average, the excess being most marked over that portion of the country lying between the 87th and 97th meridians, where the departure ranges from  $+2^{\circ}.5$  to  $+3^{\circ}.6$ . This region of high mean temperature very nearly coincides with that over which the excessive and dangerous heat of the month occurred. West of the 100th meridian the mean temperature is below the average in every district, except the Southern Pacific coast region, which is normal. At Salt Lake City and Pike's Peak the temperature is above the average, the former  $1^{\circ}.4$  and the latter  $2^{\circ}.1$ . The region of greatest deficiency ( $-3^{\circ}.1$  to  $-5^{\circ}.6$ ) covers that portion of the country north of the 40th parallel and west of the 110th meridian.

*Ranges of Temperature at Signal Service Stations.*—Monthly ranges in general varied from  $30^{\circ}$  to  $45^{\circ}$  over the country east of the Rocky Mountains, and from  $40^{\circ}$  to  $55^{\circ}$  to the westward of that region. The *smallest ranges* were: San Francisco,  $18^{\circ}$ ; Galveston, Port Eads and New Orleans,  $20^{\circ}$ ; Punta Rassa and Key West,  $21^{\circ}$ ; Indianola,  $22^{\circ}$ ; Fort Macon, N. C., and Pensacola,  $24^{\circ}$ ; Portsmouth, N. C., and San Diego,  $25^{\circ}$ ; Jacksonville,  $26^{\circ}$ ; Pike's Peak and Hatteras,  $28^{\circ}$ . The *largest* were: Fort Benton,  $72^{\circ}$ ; Rock Creek, Mont.,  $71^{\circ}$ ; Fort Missoula,  $67^{\circ}$ ; Winnemucca,  $66^{\circ}$ ; Fort Sully, Dak.,  $65^{\circ}$ ; Fort Lapwai,  $64^{\circ}$ ; Boise City,  $61^{\circ}$ ; Smithville, Dak. and Forts Custer and Shaw,  $59^{\circ}$ . The *daily ranges* varied in the different districts as follows: New England,  $14^{\circ}$  at New Shoreham and  $17^{\circ}$  at Wood's Holl and Mt. Washington to  $30^{\circ}$  at Boston; Middle Atlantic states,  $15^{\circ}$  at Cape May to  $30^{\circ}$  at New York, Philadelphia and Washington; South Atlantic states,  $15^{\circ}$  at Macon and  $16^{\circ}$  at Smithville, N. C., to  $23^{\circ}$  at Kitty Hawk, Charlotte and Atlanta, and  $24^{\circ}$  at Augusta; Eastern Gulf states,  $19^{\circ}$  at New Orleans to  $24^{\circ}$  at Pensacola and  $25^{\circ}$  at Vicksburg; Western Gulf states,  $17^{\circ}$  at Port Eads and  $18^{\circ}$  at Indianola to  $31^{\circ}$  at Shreveport and  $33^{\circ}$  at Fort Gibson; Rio Grande valley,  $24^{\circ}$  at Brownsville to  $32^{\circ}$  at Castroville, Uvalde and Laredo; Ohio valley and Tennessee,  $25^{\circ}$  at Memphis to  $33^{\circ}$  at Pittsburgh and  $35^{\circ}$  at Morgantown; Lower Lake region,  $22^{\circ}$  at Erie to  $31^{\circ}$  at Detroit and  $33^{\circ}$  at Cleveland; Upper Lake region,  $22^{\circ}$  at Grand Haven to  $29^{\circ}$  at Marquette and Alpena, and  $32^{\circ}$  at Port Huron; Upper Mississippi valley,  $23^{\circ}$  at La Crosse to  $31^{\circ}$  at Des Moines and  $32^{\circ}$  at Keokuk; Missouri valley,  $27^{\circ}$  at Omaha and  $28^{\circ}$  at Huron to  $35^{\circ}$  at Leavenworth and  $41^{\circ}$  at Fort Bennett; extreme Northwest,  $32^{\circ}$  at Moorhead to  $42^{\circ}$  at Bismarck and St. Vincent and  $50^{\circ}$  at Fort Buford; Northern slope,  $32^{\circ}$  at Helena and  $36^{\circ}$  at North Platte to  $53^{\circ}$  at Fort Custer and  $54^{\circ}$  at Fort Assinnaboine; Middle slope,  $21^{\circ}$  on Pike's Peak to  $31^{\circ}$  at Dodge City and  $33^{\circ}$  at Fort Elliott; Southern slope,  $27^{\circ}$  at Henrietta to  $33^{\circ}$  at Jacksboro' and  $38^{\circ}$  at El Paso; Northern plateau,  $42^{\circ}$  at Lewiston and Spokane to  $51^{\circ}$  at Eagle Rock and  $57^{\circ}$  at

Missoula; Middle plateau, 34° at Salt Lake City and 35° at Pioche to 53° at Winnemucca; Southern plateau, 28° at Santa Fé to 42° at La Mesilla and 44° at Prescott; North Pacific coast, 31° at Portland to 38° at Roseburg; Middle Pacific coast, 17° at San Francisco to 35° at Sacramento and 36° at Red Bluff; South Pacific coast, 18° at San Diego to 43° at Visalia and 59° at Campo.

*Deviations from Mean Temperatures.*—*Connecticut*: Southington, mean temperature about normal. *Illinois*: Riley, mean temperature 4°.4, about the average of the past 20 years; warmest occurred in 1867, mean 74°.4. *Iowa*: Clinton, mean temperature 3°.0 above the average. *Kansas*: Manhattan, warmest since 1874. *Maine*: Gardiner, mean temperature 0°.3 above the average of the past 45 years. *Missouri*: St. Louis, Missouri, Weather Service reports mean temperature 1°.2 above the average of the past 45 years; only twice in that period has the



mean temperature of any month exceeded that of August, 1881, 83°.5, viz., in July, 1854, and July, 1860.

*High Temperatures.*—This subject for the month of August, 1881, presents features of equal importance and interest with those of the past month of July. The territory embraced within the area of excessive heat is considerably enlarged to the eastward as compared with July, and, as usual, coincides with the region of greatest departure of the monthly mean from the average for many years. Those portions of the month within which the maximum rises obtained are confined between the 3d and 6th, and again between the 9th and 14th. During these periods the relative distribution of atmospheric pressure placed the barometric minima over the northern portions of the country, where their dilatory movement to eastward, as in areas No. II and III, chart No. I, appeared to influence very sensibly the accompanying rise of the thermometer. The following data has been collected independent of the reports of regular Signal Service observers, and illustrates more nearly the excessive suffering of animal and vegetable life than the actual temperature of the air scientifically considered. *Arkansas*: Little Rock, 12th, 100° to 104°; several sunstrokes, one fatal. *Illinois*: Mattoon, 4th, from 2.30 to 5 p. m., 102° in the shade; 5th 100°; 6th, 1 p. m., 100°; 9th, 103°, air as hot and withering as an India simoon. Sandwich, 4th, 103°. Fairbury, 4th, 106°. Danville, 4th, 108°. Pontiac, 4th, 101°. Bloomington, 4th, 102°; 5th, 100°; 12th, 103°. Lasalle, 4th, 106°. Chatsworth, 4th, 106°. Elgin, 5th, 98°; numerous sunstrokes; outdoor work generally suspended. Chicago, 5th, four sunstrokes, two fatal; 8th, deaths of the past week number 5,257, or at the rate of 50.52 per 1,000, as against the normal rate of 18 per 1,000; cause of abnormal increase, the accompaniment of intense heat. Champaign, 12th, 106°; scorching southerly winds. Charleston, 12th, 102°; large number of hogs died from excessive heat. Quincy, 12th, 108°, hottest in past 14 years. Cairo, 12th, 103°. Waukegan, 4th, 10.30 a. m., 89°; 12 m., 99°; 2.15 p. m., 101°.5; 5th, 9 a. m., 89°; 10.30 a. m., 94°; 40 laborers on the Northwestern R. R. compelled to stop work; several sunstrokes, none fatal. South Elgin, 5th, 107°; out door work entirely suspended. Plano, 5th, during past four days temperature ranged from 98° to 108°. Vandalia, 9th, 108°; a scorching southwest wind struck the town about 10 a. m., producing a remarkable effect on animal and vegetable life; nothing like it ever before experienced. 12th, 110° in the shade; hottest ever known in this section of the country. Carrollton, 12th, 108°; hottest ever experienced; business seriously interfered with and agricultural interests terribly depressed. Chester, 8th to 11th, 104°; 12th, 105°, business partially suspended. Fairfield, 12th, 106° to 110° in the shade. Urbana, 12th, 100° to 106°;

parching southerly winds; one sunstroke. Springfield, 12th, 100° to 105°; one sunstroke. Sand-oval, 9th, 105°. Bunker Hill, 9th, 106°. Salem, 9th, 3 p. m., 104°; vegetation withered under a hot, parching wind. *Indiana*.—Laporte, 5th, 102°. Michigan City, 4th, 100°. South Bend, 5th, 104°. Ft. Wayne, 5th, 103°; two fatal sunstrokes. Lafayette, 5th, 99°; four sunstrokes, two fatal. Indianapolis, 12th, 101°. Spencer, 9th, four separate thermometers in different parts of the city, registered 106° in the shade, for a period of five hours, from 10 a. m. to 3 p. m. A thermometer exposed to the direct rays of the sun, shining upon a metallic back-ground, registered 150°; when shining upon the roof of a wood-shed, registered 140°. A kettle containing 20 gallons of water and standing fully exposed to the direct rays of the sun, rose from 60° to 100°, between 10 a. m. and 3 p. m. New Albany, 12th, 105°; hottest in past 60 years; all out-door work suspended; great suffering in the rolling-mills, glass-works and other factories. St. Meinrad, 12th, 104°, hottest in past 10 years. *Iowa*.—Des Moines, 5th, 99°.5, highest ever recorded. McGregor, 4th, 105°. Burlington,

*Table of Comparative Maximum Temperatures for the month of August.*

State or Territory.	Maximum for August, 1881, Signal Service.		Highest since Signal Service Sta- tions were opened—3 to 10 years.			Highest from any other source.			
	Station.	Temp.	Station.	Year.	Temp.	Place.	Year.	Temp.	Length of Record.
Alabama.....	Montgomery.....	97°	Montgomery.....	1874	102°	Mount Vernon Arsenal.....	1860	104°	31 years.
Arizona.....	Florence.....	110°	Yuma.....	1879	113°	Fort Mojave.....	1873	119°	21 "
Arkansas.....	Little Rock.....	102°	Stanwick.....	1877	113°	Fort Smith.....	1860	102°	41 "
California.....	Campe.....	102°	Little Rock.....	1879	108°	Fort Yuma.....	1879	117°	31 "
Colorado.....	Denver.....	96°	Red Bluff and Visalia.....	1879	108°	Fort Lyon.....	1868	118°	20 "
Connecticut.....	New Haven.....	96°	Denver.....	1878	105°	New Haven.....	1864	98°	57 "
Dakota.....	Smithville.....	112°	New Haven.....	73, 76	90°	Fort Randall.....	1863	108°	21 "
Delaware.....	Delaware Breakwater.....	91°	Fort Sully.....	1876	107°	Fort Lincoln.....	1876	110°	11 "
Dist. of Columbia.....	Washington.....	101°	Delaware Breakwater.....	1880	80°	Fort Delaware.....	1863	101°	44 "
Florida.....	Jacksonville.....	96°	Washington.....	1874	101°	Washington.....	1838	101°	48 "
Georgia.....	Augusta.....	100°	Jacksonville.....	1874	100°	Fort Barrancas.....	1878	103°	30 "
Idaho.....	Fort Lapwai.....	103°	Augusta.....	1878	103°	Fort King.....	1833	106°	10 "
Illinois.....	Springfield.....	100°	Boise City.....	1879	103°	Augusta Arsenal.....	1847	100°	51 "
Indiana.....	Indianapolis.....	101°	Springfield.....	1880	97°	Fort Boise.....	1871	121°	17 "
Indian Territory.....	Fort Supply.....	103°	Indianapolis.....	73, 74	95°	Rock Island Arsenal.....	1870	102°	8 "
Iowa.....	Des Moines.....	103°	Fort Gibson.....	1874	106°	Chicago.....	1868	102°	48 "
Kansas.....	Leavenworth.....	103°	Keokuk.....	1880	100°	New Harmony.....	1834	99°	53 "
Kentucky.....	Louisville.....	105°	Leavenworth.....	1874	107°	Fort Gibson.....	1870	113°	21 "
Louisiana.....	Shreveport.....	105°	Louisville.....	1874	102°	Fort Madison.....	1870	101°	42 "
Maine.....	Portland.....	89°	Shreveport.....	1875	104°	Muscatine.....	1861	101°	42 "
Maryland.....	Baltimore.....	95°	Portland.....	1876	95°	Fort Riley.....	1860	108°	25 "
Massachusetts.....	Boston.....	97°	Baltimore.....	1874	97°	Fort Leavenworth.....	1860	103°	50 "
Michigan.....	Detroit.....	99°	Boston.....	73, 78	90°	Newport Barracks.....	1870	102°	28 "
Minnesota.....	St. Paul.....	96°	Marquette.....	1879	90°	Baton Rouge Barracks.....	1877	102°	35 "
Mississippi.....	Vicksburg.....	99°	Breckinridge.....	1876	101°	Brunswick.....	1868	98°	32 "
Missouri.....	St. Louis.....	100°	Vicksburg.....	1878	100°	Gardiner.....	1841	94°	44 "
Montana.....	Fort Benton.....	108°	St. Louis.....	74, 80	101°	Fort McHenry.....	1824	100°	50 "
Nebraska.....	North Platte.....	101°	Fort Keogh.....	1880	100°	Fort Washington.....	1853	110°	38 "
Nevada.....	Winnemucca.....	106°	Omaha.....	1874	105°	Andover.....	1864	98°	44 "
New Hampshire.....	Mount Washington.....	67°	Winnemucca.....	78, 79	100°	New Bedford.....	1818	91°	68 "
New Jersey.....	Sandy Hook.....	96°	Mount Washington.....	1876	72°	Marguette.....	1862	100°	22 "
New Mexico.....	La Mesilla.....	98°	Barneget.....	1874	95°	Fort Brady.....	1854	96°	58 "
New York.....	Oswego.....	97°	La Mesilla.....	1878	107°	Fort Ridgely.....	1861	102°	11 "
North Carolina.....	Charlotte.....	101°	Rochester.....	1874	90°	Fort Snelling.....	1838	97°	61 "
Ohio.....	Cincinnati.....	101°	Wilmington.....	1878	99°	Columbus.....	1862	98°	9 "
Oregon.....	Umatilla.....	99°	Cincinnati.....	1874	97°	St. Louis.....	1834	108°	48 "
Pennsylvania.....	Pittsburg.....	100°	Umatilla.....	1879	104°	Jefferson Barracks.....	1860	102°	36 "
Rhode Island.....	Newport.....	83°	Pittsburg.....	1880	98°	Fort Ellis.....	1875	112°	13 "
South Carolina.....	Charleston.....	93°	Newport.....	76, 79	87°	Fort McPherson.....	1870	100°	15 "
Tennessee.....	Nashville.....	103°	Charleston.....	76, 78	97°	Fort Halleck.....	1875	106°	14 "
Texas.....	Eagle Pass.....	108°	Nashville.....	1874	104°	Portsmouth.....	1840	97°	3 "
Utah.....	Salt Lake City.....	100°	Rio Grande.....	1876	108°	Fort Constitution.....	1850	94°	33 "
Vermont.....	Burlington.....	94°	Salt Lake City.....	1875	101°	South Orange.....	1876	98°	7 "
Virginia.....	Lynchburg.....	100°	Burlington.....	1878	97°	Newark.....	1877	98°	35 "
Washington T'y.....	Almota.....	93°	Lynchburg.....	1879	96°	Fort Bascom.....	1870	108°	6 "
West Virginia.....	Morgantown.....	92°	Dayton.....	1880	93°	Auburn.....	1861	110°	38 "
Wisconsin.....	La Crosse.....	98°	Morgantown.....	1874	92°	Lansingburg.....	1843	104°	20 "
Wyoming.....	Cheyenne.....	95°	Milwaukee.....	1874	85°	Fort Johnson.....	1876	101°	56 "
			Cheyenne.....	1880	94°	Cincinnati.....	1868	100°	43 "
						Fort Dalles.....	1853	104°	16 "
						Mount Joy.....	1869	105°	9 "
						Philadelphia.....	1841	98°	128 "
						Providence.....	1866	99°	35 "
						Charleston.....	1752	96°	104 "
						Aiken.....	1878	98°	7 "
						Humboldt.....	70, 71	104°	4 "
						Fort Clark.....	1871	113°	25 "
						San Antonio.....	1871	109°	32 "
						Mount Carmel.....	1877	106°	7 "
						Fort Douglas.....	1871	103°	19 "
						Lunenburg.....	1864	106°	19 "
						Alexandria.....	1863	104°	11 "
						Fortress Monroe.....	1851	96°	55 "
						Fort Walla Walla.....	36, 60	107°	12 "
						Weston.....	1876	93°	3 "
						Fort Howard.....	23, 26	100°	30 "
						Fort Laramie.....	1876	107°	27 "

5th, 106°; during past four days ranged from 95° to 106°. Marshalltown, 5th, 98° to 104°; out-door work entirely suspended. Logan, 11th, 103°, highest in past 24 years. *Kentucky*.—Louisville, 12th, 105°, highest ever recorded. Millersburg, 12th, during past four days temperature ranged from 90° to 110°. Paducah, 12th, 2 p. m., 108°. *Massachusetts*.—Boston, 5th, 97°; two fatal sunstrokes. *Michigan*: South Haven, 4th, 98°; Jackson, 5th, 102°. *Manitoba*: Winnipeg, 12th, 91°; during past fortnight the temperature ranged from 73° to 91°; record without parallel in the history of this country. *Missouri*: St. Joseph, 4th, 100°; St. Louis, 9th, 7 a. m., 82°; 8 a. m., 85°; 9 a. m., 89°; 10 a. m., 93°; 11 a. m., 96°; 12 m., 96°; 1 p. m., 100°; 2 p. m., 101°; 3 p. m., 103°; 4 p. m., 103°; 5 p. m., 100°; 6 p. m., 98°; three sunstrokes, one fatal; black-bulb thermometer registered a maximum of 149°. 12th, 106° in shade; several sunstrokes, none fatal; hottest in past 45 years. Joplin, 12th, 105°; one sunstroke. Hannibal, 12th, 103°; one sunstroke; several horses died from excessive heat. *New Hampshire*: Hanover, 5th, 101° in the shade and 132° in the sun. Weirs, 5th, 101°. Manchester, 5th, 100° to 103°. Concord, 5th, 100°. *New Jersey*: Trenton, 5th, 100° in shade; work in mills, suspended; several sunstrokes, most of them fatal. Long Branch, 5th, 2 p. m., 109°; five sunstrokes, none fatal; four horses died from overheating. Ocean Grove, 5th, 97°; two horses died from intense heat. Bordentown, 5th, 100°; 13th, 101°. *New York*: New York city, 5th, 39 sunstrokes, 6 fatal; 94° in the shade; at points along the Hudson, south of Albany, 97° to 100°; 6th, 19 sunstrokes, none fatal. Brooklyn, 6th, 6 sunstrokes, 3 fatal. Poughkeepsie, 5th, 97°; several sunstrokes, none fatal. Troy, 5th, 100°; several sunstrokes, two fatal. *Ohio*: Cincinnati, 5th, 98°, five sunstrokes, one fatal. Cleveland, 12th, noon, 100° to 102°; 3 p. m., 100°; hottest ever experienced; two sunstrokes, none fatal. Canton, 12th, 103°; one sunstroke. Madison, 12th, 104°; all out-door work suspended. *Pennsylvania*: Philadelphia, 5th, 97°; 9 sunstrokes, 6 fatal. Milton, 31st, 115°; hottest ever known. *Tennessee*: Clarksville, 12th, 12 m., 103°; 2 p. m., 104°.5; hottest in the past 33 years. Ashwood, 12th, 106°, hottest ever known in this section; will long be remembered as the "memorable hot Friday."

Table of Maximum and Minimum Temperatures for August, 1881.

State or Territory.	Signal Service.			U. S. Army Post Surgeons or Voluntary Observers.			State or Territory.	Signal Service.			U. S. Army Post Surgeons or Voluntary Observers.		
	Station.	Max.	Min.	Station.	Max.	Min.		Station.	Max.	Min.	Station.	Max.	Min.
Alabama.....	Montgomery.....	97°	68°	Auburn.....	.....	67°	Nebraska.....	Omaha.....	101°	.....	Lincoln.....	112°	.....
Do.....	Moblie.....	.....	68°	.....	.....	.....	Do.....	North Platte.....	.....	48°	.....	.....	.....
Arizona.....	Florence and Yuma.....	110°	.....	Texas Hill.....	117°	.....	Do.....	Nevada.....	Winnemucca.....	100°	34°	Golconda.....	103°
Do.....	Prescott.....	.....	41°	.....	.....	.....	N. Hampshire.....	Mt. Washing'n.....	87°	35°	Auburn.....	98°	.....
Arkansas.....	Little Rock.....	102°	71°	.....	.....	.....	New Jersey.....	Sandy Hook.....	96°	.....	Acto.....	100°	54°
California.....	Campo.....	102°	30°	Borden, Goshen, Ravensna and Newhall.....	108°	.....	Do.....	Cape May.....	.....	58°	Vineland.....	.....	.....
Do.....	.....	.....	.....	.....	.....	.....	Do.....	.....	.....	.....	Freehold.....	.....	54°
Colorado.....	Denver.....	96°	.....	Ft. Lyon.....	101°	.....	New Mexico.....	La Messilla.....	9°	.....	Fort Union.....	.....	40°
Do.....	Pike's Peak.....	.....	29°	.....	.....	.....	Do.....	Silver City.....	.....	46°	.....	.....	.....
Connecticut.....	New London.....	83°	56°	Ft. Pembina.....	.....	38°	New York.....	Rochester.....	.....	.....	Waterburg & West Point.....	99°	.....
Dakota.....	Smithville.....	11°	.....	.....	.....	.....	Do.....	N. York City.....	96°	.....	Johnsto n.....	.....	42°
Do.....	Ft. Sully.....	.....	42°	.....	.....	.....	Do.....	Buffalo.....	.....	0°	Weldon.....	107°	.....
Delaware.....	Breakwater.....	94°	60°	Honston.....	100°	.....	North Carolina.....	Charlotte.....	101°	.....	.....	.....	.....
Dist. Columbia.....	Washington.....	101°	57°	.....	.....	.....	Do.....	Kithhawk, Portsmouth, Wilmington and Smithville.....	.....	.....	Highlands.....	.....	53°
Florida.....	Jacksonville.....	96°	70°	Ft. Barrancas.....	101°	65°	Do.....	Cincinnati.....	101°	.....	Pellfontaine & Jacksonburg.....	104°	.....
Do.....	Punta Rassa.....	.....	70°	Forsyth.....	101°	.....	Do.....	Cleveland.....	.....	51°	Wes erville.....	.....	48°
Georgia.....	Augusta.....	100°	.....	McPherson Barracks.....	101°	33°	Do.....	.....	.....	.....	Ft. Klamath.....	.....	20°
Do.....	Atlanta.....	.....	65°	Muscataine.....	104°	.....	Do.....	.....	.....	.....	.....	.....	.....
Iowa.....	Des Moines.....	103°	.....	Clinton.....	.....	48°	Cregon.....	Umatilla.....	96°	.....	Milton.....	115°	.....
Do.....	Dubuque.....	.....	51°	.....	.....	.....	Do.....	Roseburg.....	.....	43°	West hester.....	.....	35°
Idaho.....	Ft. Lapwai.....	103°	.....	.....	.....	.....	Do.....	Pittsburg.....	100°	54°	Fort Adams.....	98°	53°
Do.....	Eagle Rock.....	.....	35°	Swanwick.....	110°	.....	Pennsylvania.....	.....	.....	.....	Statelurg.....	.....	64°
Illinois.....	Cairo.....	103°	.....	Morrison.....	.....	48°	Do.....	Newport.....	.....	54°	Ashwood and Austin.....	106°	.....
Do.....	Springfield & Champaign.....	.....	54°	Laconia.....	105°	.....	Rhode Island.....	Charleston.....	98°	69°	.....	.....	.....
Do.....	Indianapolis.....	101°	56°	Spiceland.....	.....	52°	South Carolina.....	Nashville.....	103°	.....	.....	.....	.....
Indiana.....	.....	.....	.....	Independence.....	108°	.....	Tennessee.....	Knoxville.....	.....	13°	.....	.....	.....
Do.....	Fort Gibson.....	106°	65°	Topeka.....	.....	33°	Texas.....	Eagle Pass.....	108°	.....	.....	.....	.....
Kansas.....	Leavenworth.....	105°	63°	.....	.....	.....	Do.....	Fort Davis.....	.....	56°	.....	.....	.....
Do.....	.....	.....	.....	.....	.....	.....	Utah.....	Salt Lake City.....	100°	48°	Promontory & Co lunc.....	102°	.....
Kentucky.....	Louisville.....	105°	63°	.....	.....	.....	Do.....	.....	.....	.....	Coalville.....	.....	30°
Louisiana.....	Shreveport.....	105°	68°	.....	.....	.....	Do.....	.....	.....	.....	Charlottesville.....	102°	.....
Maine.....	Portland.....	.....	80°	Owing's Mills.....	.....	55°	Vermont.....	Burlington.....	94°	50°	Woodstock.....	.....	44°
Do.....	Eastport.....	.....	51°	Rowe.....	.....	45°	Do.....	.....	.....	.....	Snowville.....	.....	43°
Maryland.....	Baltimore.....	98°	60°	Thornville.....	101°	.....	Virginia.....	Cape Henry.....	103°	60°	.....	.....	.....
Massachusetts.....	Boston.....	97°	.....	.....	.....	.....	Do.....	Chincoteague.....	.....	60°	.....	.....	.....
Do.....	Thatcher's I.....	.....	49°	.....	.....	.....	Do.....	Almota.....	.....	39°	Flemington.....	93°	47°
Michigan.....	Detroit.....	99°	.....	Fayette.....	100°	68°	Washington T.....	Dayton & Spokane.....	.....	38°	Edgerton.....	103°	.....
Do.....	Marquette.....	.....	41°	Pierce City.....	.....	61°	Do.....	Morgantown.....	.....	52°	Belait and Neilville.....	.....	49°
Minnesota.....	St. Paul.....	96°	.....	Fort Ellis.....	.....	30°	Do.....	La Crosse.....	96°	.....	Ft. Fetterman.....	98°	.....
Do.....	St. Vincent.....	.....	38°	.....	.....	.....	Wisconsin.....	Madison and Milwaukee.....	.....	52°	Ft. Bridger.....	.....	33°
Mississippi.....	Vicksburg.....	99°	71°	.....	.....	.....	Do.....	.....	.....	.....	.....	.....	.....
Missouri.....	St. Louis.....	106°	63°	.....	.....	.....	Wyoming.....	.....	.....	.....	.....	.....	.....
Do.....	Fort Benton.....	108°	.....	.....	.....	.....	Do.....	.....	.....	.....	.....	.....	.....
Montana.....	Rock Creek.....	.....	31°	.....	.....	.....	Do.....	.....	.....	.....	.....	.....	.....
Do.....	.....	.....	.....	.....	.....	.....	Do.....	.....	.....	.....	.....	.....	.....

*Texas*: San Antonio, 16th, three fatal cases of sunstroke, first ever known at this place. *Vermont*: Bradford, 5th, 102°. Norwich, 5th, 101°. White River Junction, 5th, 5 a. m., 70°, 9 a. m., 85°; 2 p. m., 100°; 9 p. m., 90°. *Virginia*: Petersburg, 13th, 106°; hottest for many years. Richmond, 13th, 1.30 p. m., 106°; great suffering from intense heat. *Wisconsin*: Milwaukee, 5th, warmest day in the history of the city; several fatal sunstrokes. Racine, 4th, 102°; several sunstrokes; outdoor work suspended. La Crosse, 5th, 104°; three sunstrokes, none fatal. Watertown, 5th, 102°; one fatal sunstroke. Prairie du Chien, 5th, 103°; many laborers compelled to cease work; two fatal sunstrokes. Oconomowoc, 5th, 99°; one fatal sunstroke.

*Frost*.—Eagle Rock, Idaho, 31st, on ranches 10 miles from station; Winnemucca, 27th, heavy, 28th, very severe; Deer Lodge, Mont., 27th; Pike's Peak, 20th, killing vegetation, 22d, 28th, 29th, 30th, 31st; Escanaba, 15th, light; St. Vincent, 6th, first of season.

*Ice*.—Eagle Rock, Idaho, 31st, on ranches 10 miles from station; Winnemucca, 28th, one-eighth inch thick.

## PRECIPITATION.

The general distribution of rain-fall for the month of August, 1881, is shown on chart No. III, from the reports of over 500 stations. From the table in the left-hand corner of the chart is obtained a monthly average for each of the various districts, determined from the records (covering a period of many years,) of Signal Service stations, and also a comparison of the present month with such averages. Upon an examination of the chart, and a comparison with the records of August for previous years, it is found that no such widespread and excessive deficiencies have occurred since the establishment of Signal Service stations. The drought of the present month has been almost without precedent for extent and severity, as will be seen by referring to the paragraph headed, *Drought*. In 1873 the deficiency of precipitation was extensive in area, covering nearly three-fourths of the country, but the departure from normal in any district was comparatively small, while, on the contrary, for August, 1881, the deficiencies range from 0.16 inch in the Southern Pacific coast region to 3.46 inches in the Middle Atlantic states, the latter deficiency being the largest ever yet reported. In previous years large deficiencies were reported as follows: 1874, West Gulf states, 3.40 inches; 1876, New England, 3.06 inches; 1877, Middle Atlantic, 2.50 inches; 1878, Upper Missouri valley, 1.96 inches; 1879, Lower Missouri valley, 1.88 inches. It is interesting to note that the regions of excess for the month of August, during the past eight years, have been almost invariably the Florida peninsula and Minnesota, while the regions of deficiency lying between covered the central portion of the country east of the 105th meridian. Another region of marked excess for the present month is found in central and eastern Arizona, western New Mexico and southern Colorado, where exceedingly heavy rains and serious floods have occurred. In the Middle Pacific coast region the rainfall, though ranging from 0.00 to 0.05 inch, is normal. In the North Pacific coast region there is an excess of 0.24 inch.

*Deviation from Average Precipitation*.—*Connecticut*: Southington, rainfall considerably below the average; nearly the whole amount for the month fell in one day. *Illinois*: Anna, rainfall considerably below the average of the past 18 years. Riley, rainfall 2.67 inches below the average of the past 20 years; driest August occurred in 1864. *Kansas*: Manhattan, driest since 1874. *Maine*: Gardiner, rainfall 1.49 inches below the average of the past 45 years. *New Jersey*: Paterson, monthly rainfall 1.13 inches; smallest since 1836. *Missouri*: St. Louis, Missouri Weather Service reports monthly rainfall as 0.27 inch, or 3.76 inches below the average of the past 45 years. But once in this period has the monthly rainfall been less, viz., in August, 1873, when 0.04 inch fell; the smallest monthly rainfall (0.02 inch) occurred in September, 1871. Throughout the State there has been extreme suffering from drought which began about the middle of July. Grass completely dried up, and in many places has been burned, leaving the ground black and charred. In respect to extent and severity, the present drought strongly resembles that of 1854.

*Special Heavy Rainfalls*.—Dyberry, Pa., 1.00 inch in 15 minutes; Morrilton, Dakota, 3.20. 2d, New Shoreham, R. I., 2.04; Lake Village, N. H., 3.44 in 1 hour; Wiers Bridge, N. H., 1.92; Escanaba, 1.55. 2d and 3d, Pensacola, Fla., 10.41; Ft. Barrancas, Fla., 9.53; Embarrass, Wis., 3.40. 3d, Mobile, 6.20; Duluth, 2.18. 4th, Mobile, 3.10; Ft. Barrancas, 3.50; Montgomery, 1.56. 4th and 5th, Pensacola, Fla., 7.47. 5th, Mobile, 3.56; Ft. Barrancas, Fla., 2.80. 5th and 6th, Alpena, 2.23; Port Eads, La., 7.11. 6th, Westerville, Ohio, 2.80; Vicksburg, 2.39. 7th, Freehold, N. J., 1.25 in 1 hour; Port Jervis, N. Y., 1.50; Lenoir, N. C., 1.90; Mt. Washington, 1.71; Augusta, 2.79; Barnegat, 4.86; Ft. Hamilton, N. Y., 1.80;